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TROX® TECHNIK

ComControl Comfort Controller TVRC with Belimo CR 24

Installation and Operating Instructions

TVRC (Duct module)

Room control unit (Cabin module)

Before installing and commissioning the units, read and observe these installation and operating Instructions!

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1.0 Explanation of graphic symbols

⚠ Warning to persons and over damages

⚠ Warning of electrical voltage

i Notes on important information

i

2.0 Area of application of this installation and operating Instructions

- Delivery and Storage
- Installation
- Electrical installation
- Commissioning
- Maintenance

3.0 Proper Application of the units

The ComControl Comfort Volume Flow Control Units TVRC are suitable for use in ventilation and air conditioning systems of Ships and Hotels.

The units are not suitable for:

- Highly explosive areas
- Wet areas
- Outdoor use
- Use with dusty or aggressive air

⚠

4.0 Personnel qualification

- Use only trained and specialist personnel.
- For carrying out the electrical connections, only use electrical specialists or instructed personnel under specialized supervision!

5.0 Safety conscious work environment, Accident prevention

During installation, electrical installation, commissioning, repair and maintenance of the TVRC units, the normal accident prevention regulations must be observed, as well as the generally recognized regulations of site working.

5.1 Accident prevention regulations:

- “General regulations (VGB 1)”
- “Electrical system and facilities (VGB 4)” and others.

5.2 DIN/VDE/EN standards and regulations

- DIN/VDE 0100, DIN/VDE 0105 and others.

i

6.0 Delivery and Storage

Several units are supplied on each pallet, held by bands against sliding. TVRC’s are packed in non-returnable containers.

- Immediately after delivery, check units for completeness and transport damage. If delivery is incomplete or if transport damage has occurred, inform the carriers and Trox immediately.
- Do not expose the units (even when packed) to the direct effect of weather. Protect from water, direct sunlight and dirt.
- Do not store in temperatures above 50 °C.

7.0 Transport on site

Units should not be carried by the control components but only by the terminal unit edges.

- The differential pressure sensor in the spigot connection is a measuring instrument which is extremely important for correct functioning, and must be handled with particular care. Do not therefore pull on the aluminium tubes of the sensors.

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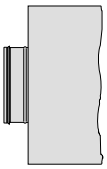
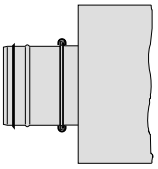
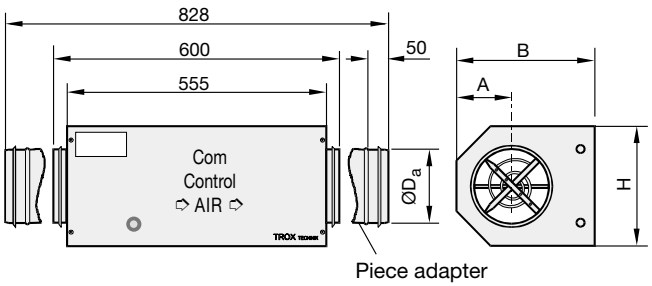
TVRC with lip seal (standard)



TVRC with raised edges and piece adapter (optional)



Duct module main dimensions of TVRC in mm



DN	∅ D_a	A	B	H	I_{nom} in A	Q_{el} in W
125	124	145	310	260	3.93	900
160	159	125	310	260	8.74	2000
200	199	145	350	300	8.74	2000

8.0 Installation

The ComControl Comfort Controller TVRC is available in 2 duct connections variants (see following sketches).

8.1 Installation point

- Select the installation point so as the control components and maintenance openings remain accessible.
- Observe the air flow direction.
- For installation before and after bends, dampers or other flow distortion elements, note that an increase in flow tolerance and noise level can result.
- Arbitrary installation position.
- Apart from the housing cover of the TVRC, a space of at least a 100 mm for opening the cover must be provided.

8.2 Technical data

Supply voltage:	230 VAC, 50/60 Hz
Safety class:	I
Protection level:	IP40
Ambient temperature:	0 °C to 50 °C

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Installation and Operating Instructions

9.0 Safety

- Installation and wiring, as well as the commissioning, should only be carried out by specialists!
- During installation, wiring and commissioning, the normal rules of site working, in particular the safety and accident prevention regulations, must be observed.
- Because of the risk of injury from edges and burrs, carry and install units only while wearing gloves.
- Mount devices properly and secure fixings with locking nuts. Suspension points must only carry the weight of the unit. Adjacent components and connecting ducts must be supported separately.

9.1 Safety notes for maintenance

- Observe the safety notes of the units (e.g., the sticker “Important, heater elements are non earthed…”).
- Switch off the supply voltage before opening or removing the units (e.g. install an all-pole disconnecting switch with a 3 mm contact gap in the building, ship etc.).
- Let the reheat coil to cool down.

9.2 Wiring

- The connections to the supply voltage and communication are led across externally as plug connections.
- The electric connection must be carried out by an electrical specialist in conformance with all protection measures!
- For the safe electrical separation of the units, a de-energising mechanism, e.g. an all-pole disconnecting switch with a 3 mm contact gap, must be installed!
- The following regulations and conditions must be observed:
  - VDE regulationsn
  - Regulations of local EVU
  - Wiring guidelines and diagrams.

9.3 Residual risks

- Under extremely rare and unfavorable conditions, despite observation of the regulations listed, faults can occur in the controller due to electromagnetic fields. These can usually be remedied by screening or relocating the controller.
- Foreseeable damage which could occur due to the failure of control components must be prevented in critical cases by corresponding measures.

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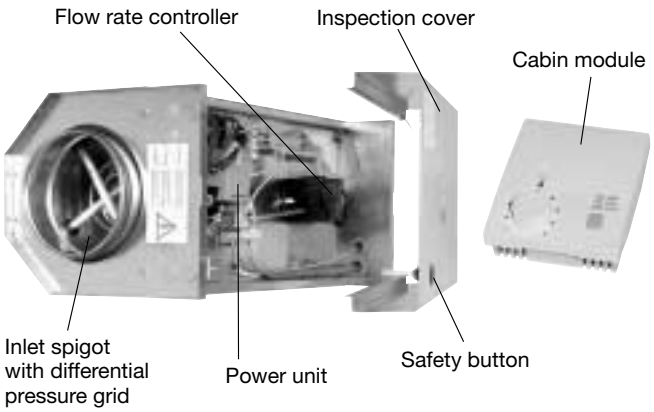
Installation and Operating Instructions

TVRC (Duct module)



10.0 Functions

The ComControl Comfort controller unit comprises the duct module (TVRC) and the cabin module. Heating and volumetric flow set points are forwarded from the cabin module to the duct module.

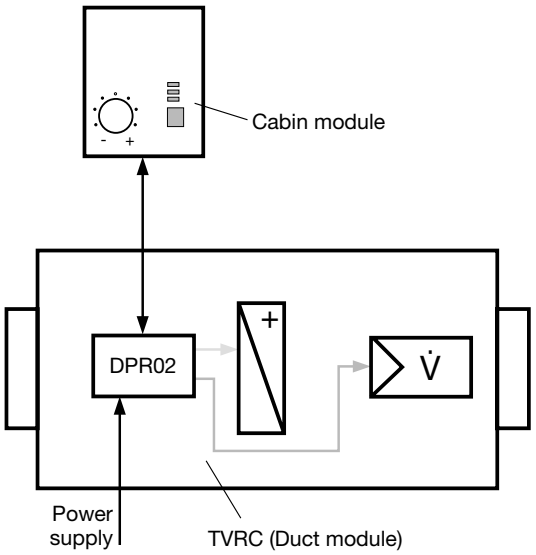
The unit controls the required room temperature with the aid of the volumetric flow and the duct temperature.

A triple safety circuit prevents the unit overheating.

The cabin module is operated by the room user and is fitted to the wall. Apart from the controls, it also contains the room temperature controller with room sensor.

A service socket (LON interface) enables the experienced service personnel to connect a service terminal (e.g. a laptop) for setting parameters.

Function schema



11.0 Commissioning

A comfort ventilation system, such as in passenger ships, must also operate in open sea. Thus, an adequate commissioning, particularly in plants with LON connections, is absolutely necessary. We recommend that start-up be implemented by Trox personnel.

Options
The units can be supplied in the two operating modes described below. The commissioning may differ depending upon the operating mode.

11.1 Operating mode SA

Stand-alone system with Trox standard parameters, no LON connection of the units

– Connections and wirings are shown on page 7.
– Functional test and possible project-specific adjustment of the parameters.

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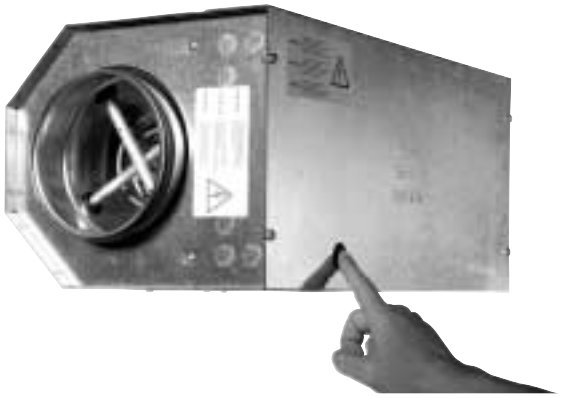
Installation and Operating Instructions

Remove the protective grounding cable on the inspection cover

Reset the safety temperature limiter



Cable duct for maintenance purposes

12.0 Maintenance

12.1 Opening of the inspection cover

(The minimal space requirements to open the unit is 100 mm)

IMPORTANT!
Switch off the unit before opening the inspection cover and working with the electrical tension!
To do this, use an all-pole disconnecting switch with a 3 mm contact gap!

The following safety sticker must be considered:

Important!
Heater elements are not earthed and can be alive in the event of an error! Before doing maintenance repair work, disconnect the unit from the supply mains!

The inspection cover is connected to the housing with a protective grounding cable.

In case of servicing, open the inspection covers and take off the protective earth. Reattach the protective earth before closing the inspection cover again.

12.2 Safety circuit

The TVRC units are equipped with a triple safety circuit.

1. Flow monitoring
   The electrical air heater is switched off automatically below an adjustable volumetric flow (e.g. 10 % of $\dot{V}_{Nom}$).
2. Electronic limitation of the inlet temperature into the room (by default 50 °C).
   When this temperature is exceeded, the air heater is switched off.
3. Independent safety temperature limiter (90 °C).
   Can be manually reset using the button (see the photo shown).
   When this temperature is exceeded, the air heater is switched off.
   IMPORTANT! A functional inspection of the equipment must be carried out before resetting!

12.3 Cable duct for maintenance purposes

(only for constructions with raised edges and piece adapters)

If the TVRC cabine module must be disassembled for maintenance or repair purposes, a cable duct can be used and fastened with the quick locking collars. As a result, it is possibile to supply fresh air (unregulated) for the duration of the maintenance.

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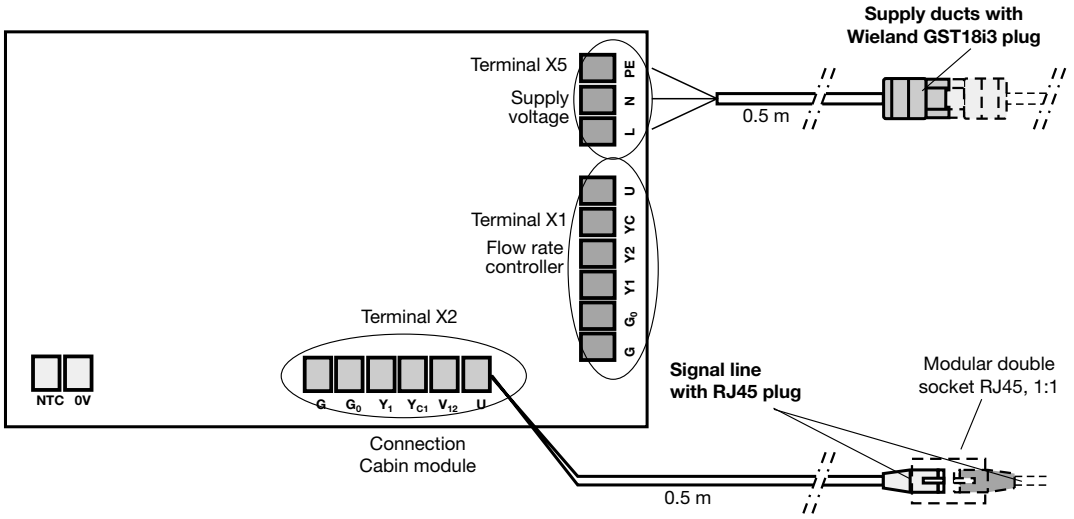
13.0 Electrical installation

Power unit DPR02 Terminal assignments



13.1 Power unit DPR02 nomenclature

Terminal X1

U	Actual value of flow rate controller
YC	Set point of flow rate controller
Y1/Y2	not used
G	Power supply 24 VAC
G_0	System ground

Terminal X2

U	Actual value of flow rate controller
V_{12}	not used
Y_{C1}	Analogue input 0 to 10 VDC (from the cabin module)
Y_1	Switched input PWM signal heater
G	Power supply 24 VAC
G_0	System ground

Terminal X5

PE	Protective earth
N	Neutral
L	230 VAC

13.2 Wiring GST18i3

N	Neutral
PE	Protective earth
L_1	230 VAC

Connections to be carried out only by electrical specialists!

Wiring	
RJ45	CR24-B2
1	7 (U5/1)
2	1 (⊥ ~)
3	6 (ao1)
4	1 (⊥ ~)
5	2 (24 V ~)
6	1 (⊥ ~)
7	9 (ao3/1)
8	1 (⊥ ~)

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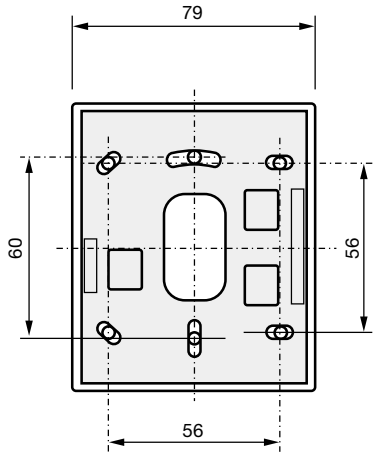
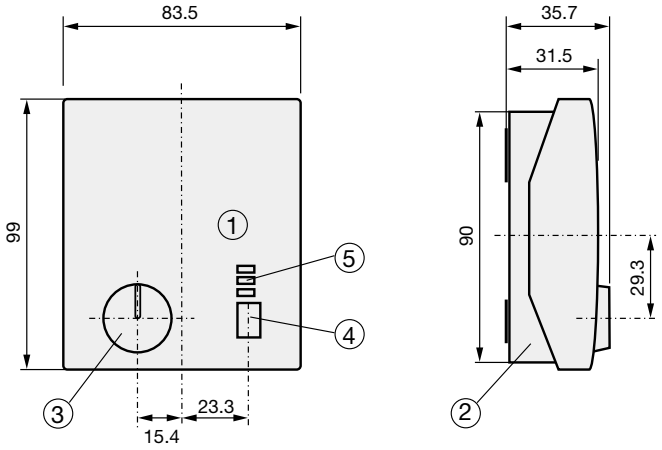
Fastening Holes (housing base)



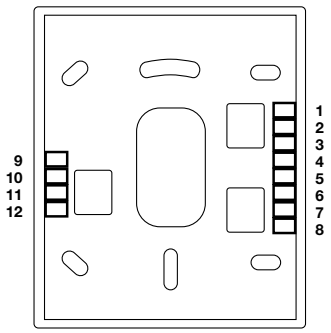
14.0 Cabine module CR 24-B2

The unit consists of a housing base with the connection terminals and the housing upper part with the lead frame and the controls. Additionally the unit comes with a shift key (Auto/Eco/Max) and 3 indicating light's.

To obtain technical data, as well as further details about installation, commissioning and operation, please consult the separate Belimo leaflet.



(1) Housing upper part
(2) Housing base
(3) Rotary switch for the stepless adjustment Set value changes
(4) Switch button (Auto/Eco/Max)
(5) Status-LED's
(Auto = green, ECO = yellow, Maximum = orange)



Cabine module CR 24-B2 (Terminal assignments)

1	⊥ Ground, Neutral
2	+~ Power supply 24 VAC
3	Window contact
4	Not used
5	Not used
6	Analogue output 0 - 10 VDC to flow volume controller
7	Actual value of flow rate controller
8	Actual value of flow rate controller, Slave
9	Switched output heater
10	Not used
11	Not used
12	Not used